Appl. No.: 10/709686
Amdt. Dated: 10/7/2006
Reply to Office action of: 08/02/2006

AMENDMENTS TO THE DRAWINGS:

There are no amendments to the drawings being presented herewith.

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REMARKS/ARGUMENTS

Claims 1 – 15 remain in this application. Claims 1 and 3 – 15 have been amended to correct minor typographical and grammatical errors.

No new matter has been introduced by these amendments to the specification, and claims.

Applicants states under their obligation under 37 CFR 1.56 that all Claims 1 – 15 were commonly owned at the time any inventions covered therein were made.

Claims 1 – 15 have been objected to for having informalities. Specifically, the Examiner states:

> The conjunction "and/or" should be modified since its use does not define equivalent structure (Claim 1). All reference terms such as SDN1 should be parenthesized (claims 1 – 15). Appropriate correction is required.

By this amendment Claim 1 has been amended to correct the use of the conjunction "and/or" as suggested by the Examiner. Likewise, Claims 1 – 15 have been amended to parenthesize all instances of reference terms such as SDN1 as suggested by the Examiner. Clearly, when viewed in this light this objection is now moot and Applicant respectfully requests this objection be removed.

Claims 1 – 3, 8, 9 and 15 were rejected under 35 U.S.C. 102(b) as being anticipated by Tamai et al. (US 6,275,004). Specifically, the Examiner states:

> The reference discloses a control power transfer system for an automobile having, inter alia, at least two batteries B1…B3 being charged from a generator 23. The batteries are provided with module to control and analyze the state of charge or health of the batteries. A microcontroller determines and controls the switching transfer of charge among the modules.

Applicant respectfully traverses these rejections. The key to Applicant's invention is directed to a dual voltage system for use in vehicles wherein each different voltage level battery may be used to charge the other, may be coupled to assist the other in performance of its load duties, and which may be independently charged from a single generator source directly. In addition, there is disclosed a means of using an external battery coupled to the system to provide current as required. In order to provide these features there is the requirement of using at least one one-way DC/DC converter and a

two-way DC/DC converter. There is no critical requirement as to how individual cells within each battery, or within either battery, are connected; nor that the cells within the two batteries maintain the same current output.

A fair reading of the Tamai et al. (US 6,275,004) reference discloses a device and method of balancing the voltage levels and charging cycles of a plurality of battery pack cells all having the same voltage rating or level (see for example, Col. 2, line 65 – Col. 3, line 22) such that a battery pack used in a hybrid type automotive vehicle may recharge individual battery pack cells without adversely affecting the rest of the cells in the pack (see for example, Col. 1, lines 7 – 12 and Col. 3, lines 23 – 37). The teaching is that of the DC/DC converter being a one-way converter that only has input from the 36V generator and outputs 12V to the battery pack (see for example, Col. 3, lines 49 – 64). Additionally, this reference discloses that the battery pack must be one of a plurality of cells connected in series and said DC/DC converter prevents current drop-off of individual cells greater than that of the rest of the cells in the pack (see for example, Col. 6, lines 16 – 35). Further still, this reference teaches the critical parameter that only the first cell in the battery pack can be directly charged (see for example, Col. 6, lines 36 – 46).

The Tamai et al. (US 6,275,004) reference does not disclose, teach, or fairly suggest to one skilled in the art how to use two different voltage systems within an automotive vehicle. It does not disclose, teach, or fairly suggest how to use a two-way DC/DC converter to maintain both separate voltage level batteries, or how to use a DC/DC converter to allow the use of either voltage level battery to charge the other. Further, this reference does not disclose, teach, or fairly suggest how to provide for an outside battery source to be connected to and used with the dual voltage system of Applicant's claimed invention.

Clearly, when viewed in this light the Tamai et al. (US 6,275,004) reference does not disclose, teach, or suggest the dual voltage, multiple DC/DC converter battery system of Applicant's claimed invention.

Claims 4 – 7 and 10 – 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tamai et al. (US 6,275,004). Specifically, the Examiner states:

> Regarding the use of feeding loads to different parts of the vehicle, it would have been obvious to one having ordinary skill in the art at the time the invention was made

to have supplied the different parts of the vehicle with different existing batteries in order to alleviate the stress on the individual battery, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding the use of a disable signal when the vehicle is involved in an accident, it would have been obvious to one having ordinary skill in the art to have supplied a switch to disable the battery during an accident for the purpose of preventing spark and/or fire to the battery. Thus ensure the safety of the occupants in the vehicle.

Applicant respectfully traverses these rejections. The key to Applicant's invention, as mentioned above, is directed to a dual voltage system for use in vehicles wherein each different voltage level battery may be used to charge the other, may be coupled to assist the other in performance of its load duties, and which may be independently charged from a single generator source directly. In addition, there is disclosed a means of using an external battery coupled to the system to provide current as required. In order to provide these features there is the requirement of using at least one one-way DC/DC converter and a two-way DC/DC converter. There is no critical requirement as to how individual cells within each battery, or within either battery, are connected; nor that the cells within the two batteries maintain the same current output.

A fair reading of the Tamai et al. (US 6,275,004) reference, as mentioned above, discloses a device and method of balancing the voltage levels and charging cycles of a plurality of battery pack cells all having the same voltage rating or level (see for example, Col. 2, line 65 – Col. 3, line 22) such that a battery pack used in a hybrid type automotive vehicle may recharge individual battery pack cells without adversely affecting the rest of the cells in the pack (see for example, Col. 1, lines 7 – 12 and Col. 3, lines 23 – 37). The teaching is that of the DC/DC converter being a one-way converter that only has input from the 36V generator and outputs 12V to the battery pack (see for example, Col. 3